

of the Nova, and the instrument referred to, the Thompson photographic telescope, aperture 9 inches, with a prism of 15° before the object-glass, was the only instrument I was able to employ.

Blackheath:
1892 March 11.

Photograph of the Region of Nova Aurigæ.
By Isaac Roberts, F.R.S.

The region of *Nova Aurigæ*, with R.A. $5^{\text{h}} 25^{\text{m}}$, and Decl. $+30^{\circ} 21'$ as the centre, was photographed with the 20-inch reflector on the night of February 5, which was the first night with a clear interval, after the receipt of the Edinburgh Circular No. 22 announcing the discovery. Since that date the photographs described in the sequel have been taken.

The photograph now presented is an enlargement to the scale of one centimetre to four minutes of arc from a negative taken on February 18 with an exposure of three hours. The plate was so placed in the reflector that the star D.M. No. 899, Zone 30° , mag. 6.2, should be simultaneously photographed with the Nova, and on two plates the star 26 *Aurigæ* was photographed with the Nova.

The photographs obtained have been examined by aid of the pantograver, and the photo-images of the Nova, of D.M. No. 899, and of 26 *Aurigæ* measured to 0.0001 of an inch diameter. The results are given in the following table:—

Table of measured Photo-diameters.

Date when negative was taken.	Duration of exposure of negative.	Diameter of Nova.		Diameter of D. M. No. 899, Zone 30° degrees.		Diameter of 26 <i>Aurigæ</i> .	
		In parts of an inch.	In seconds of arc.	In parts of an inch.	In seconds of arc.	In parts of an inch.	In seconds of arc.
1892.							
Feb. 5	45 ^m	0.0169	34.9	0.0174	35.9	...	" ...
13	15 ^m	0.0137	28.3	...	...	0.0142	29.3
13	5 ^m	0.0128	26.5	...	...	0.0127	26.3
18	3 ^h	0.0217	44.7	0.0203	41.9	...	...
22	20 ^m	0.0137	28.1	0.0152	31.4	...	...
22	5 ^m	0.0130	26.8	0.0146	30.0	...	...
25	5 ^m	0.0130	26.8	0.0147	30.2	...	...
25	20 ^m	0.0142	29.3	0.0144	29.7	...	...

The following observations upon the appearance of the photo-image of the Nova and of the comparison stars were made during the examination of the negatives under a magnifying power of 24 diameters.

February 5, exposure 45 min.: the image of the Nova is not as well defined at the margin as that of the star D.M. No. 899.

February 13, exposures 15 min. and 5 min. respectively: the image of the Nova is fairly well defined round the margin on each of the photographs.

February 18, exposure 3 hours: the margins of both the Nova and the comparison star No. 899 are nebulous and undefined. There are six stars visible round the Nova, within a radius distance of 50 secs. of arc, and there are also twelve stars round No. 899 within a radius of 50 secs.

The four negatives taken on February 22 and 25 show both the Nova and star No. 899 with well-defined margins, the exposures being respectively 5 mins. and 20 mins.

It will be observed, on examination of the table of the measured diameters of the Nova and the comparison stars, that no decided change in the brightness of the Nova has taken place during the interval between February 5 and 25, if we adopt the photo-images with 20 mins. exposure on the 25th as the standard; but if we adopt the image formed with 5 mins. exposure, there would be shown a fading of the light of the Nova between February 18 and 25.

Photograph of the Region of Nova Cygni. By Isaac Roberts, F.R.S.

Nova Cygni was discovered by Dr. J. F. J. Schmidt at Athens on 1876 November 24, and its co-ordinates for 1878 are given R.A. $21^{\text{h}} 36^{\text{m}} 55^{\text{s}}$, Decl. $+42^{\circ} 17' 9''$. Between that date and the year 1882 many observations concerning the Nova are recorded, but I shall refer only to the catalogue and chart by Drs. Cope-land and Lohse, published in vol. ii. of *Copernicus*. These give clear evidence of great care exercised by the observers and delineators in their preparation; and by their aid and the photographs now presented we are enabled to infer that several changes in the stars have taken place during the past ten years.

Two photographs are before us which are enlargements from a negative taken on 1891 September 27, with an exposure of 2 hours in the 20-inch reflector; one of them is enlarged to the scale of one centimetre to four minutes of arc; the other is to the same scale as the chart of the region of the Nova referred to above, which scale is one centimetre to one second of arc.

On the chart is drawn a circle enclosing a space fifteen minutes of arc in diameter, with the Nova as the centre, and I have drawn with pencil on the photograph a line enclosing a space very nearly coincident with that of the chart; we are thus enabled to make comparisons of the two with little trouble. By inspection we soon observe that changes have taken place in the brightness of some of the stars, and also some changes in